The Benefits of Racial Representation in the Middle School Science Classroom

By
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A capstone project submitted in partial fulfillment of the requirements for the degree of Masters of Arts in Teaching.

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PROJECT INTRODUCTION

This project is a unit designed to answer the question: *How does representation of different races and ethnicities impact middle school students in the science classroom?* This curriculum revolves around student misconceptions of scientists and then widening their perspectives on people who have made great contributions to the scientific community and our society. The curriculum was designed to be implemented in an eighth grade middle school science classroom, and the lesson plans were written for 45 minute classes. However, it could be modified to fit the needs of any level of the middle school. One of my main goals for this curriculum was to expose students to the various people that have contributed to science that they may not have heard or learned of before.

This curriculum was written using Understanding by Design (UbD). Understanding by Design is a backwards design by first identifying the goals or standards being addressed, then creating assessments, and finally creating lesson plans (Wiggins & McTighe, 2005). The standard used for the curriculum was from the Academic Standards in Science (Minnesota Department of Education, 2009). Once the standard and goals were determined, I went on to create the assessments. Each day of the unit has specific goals or objectives that are addressed within the lesson. Within each day there are two forms of formative assessments as well. One being a daily warm-up and the other being a daily exit ticket. Before and after each day's lesson, students will fill these out and the teacher can use them to assess the students' understanding of the material. The summative assessments include a post survey of what the students have learned and an essay asking students how diverse scientists have impacted our society and the scientific community. After creating the assessments, I was then able to make the lesson plans for each day.

This unit is three weeks long, or 15 school days. The unit begins with identifying student misconceptions on what they believe scientists are and what they look like. Once each student has made a list of the characteristics they believe embodies a scientist, a class discussion takes place. This discussion will focus on the characteristics they came up with and then introduce to students what real scientists actually look like. Students then have the opportunity to research a diverse scientist of their choice and to present the information they find to their peers. Once all presentations are complete students will take part in the summative assessments that were mentioned prior.

The lesson plans in the curriculum are laid out first in a weekly format to showcase the overall goals for that specific week. They then go more specific to the daily lesson plans and the objectives that are tackled each day. These are then followed by the materials and documents that support the lessons.

Title of Unit	Diverse Contributions to Science	Grade Level	Eighth (8th) grade
Curriculum Area	Middle School Science	Time Frame	3 weeks
Developed By	Samantha Karnes		

Stage 1 Desired Results

ESTABLISHED GOALS
8.1.3.2.1
Standard: Men and women throughout the history of all cultures, including Minnesota American Indian tribes and communities, have been involved in engineering design and scientific inquiry.
Benchmark: Describe examples of important contributions to the advancement of science, engineering and technology made by individuals representing different groups and cultures at different times in history.

Transfer

Students will be able to independently use their learning to…
Discuss the accomplishments and advancements various scientists have contributed to science.
Create a presentation based off of the independent research they do on a diverse scientist or engineer.
Analyze their own learning and identify ways they have expanded their knowledge of different perspectives in science.

Meaning

UNDERSTANDINGS
Students will understand that…
- Science is the building upon others' ideas.
- Many people contribute to science.
- Scientists are not only the same names we hear over and over, there are many people we are not taught about.

ESSENTIAL QUESTIONS
- Who is a scientist?
- What does a scientist look like?
- Who are notable scientists?
- What are some contributions scientists from various groups and cultures have made?
- How are engineering, technology, science, and society interconnected?

Acquisition

Students will know…
- That many different types of people submitted to the scientific world.
- Scientists look like everyday people and come from various places and backgrounds.
- Science is not only for old, white men. Science is for everyone, no matter their race, gender, orientation, etc.
- People different from them have made contributions to science.

Students will be skilled at…
- Creating a presentation
- Giving a professional (for 8th grade) presentation to peers
- Communicating their research findings to others
- Realizing there are many different perspectives from diverse scientists who have made significant contributions to science and our society.

Stage 2 - Evidence

Evaluative Criteria	Assessment Evidence
Standard 8.1.3.2.1	PERFORMANCE TASK(S): **Presentation on a Diverse Scientist or Engineer** Students are creating presentations on a diverse scientist of their choice. They are tasked to research important information and analyze why their scientist is

	important to the scientific world today. Students share why their scientist is significant and what accomplishments they had. **Reflection Essay** Students reflect on the unit as a whole. They write about what they learned and how this shapes their views on scientists and what kind of people scientists are. This is also the time for students to think about their education on scientists beforehand. They discuss whether or not this project has opened their views to different perspectives and types of people who have contributed to science and ultimately our society.
1. Formative Assessment **2. Formative Assessment** **3. Assess prior knowledge**	OTHER EVIDENCE: **1. Warm-ups** Beginning of every class **2. Exit Tickets** End of every class **3. Pre-Survey** Day 1 **4. Post Survey** Day 15

Stage 3 – Learning Plan

Summary of Key Learning Events and Instruction

Day 1: What is a scientist? Introduction activity identifying student misconceptions and ideas about scientists
Day 2: What is a scientist? Continued
Day 3: Learn about scientists and engineers of color through a jigsaw activity
Day 4: Day two of learning about diverse scientists through a jigsaw activity
Day 5: Introduce research project with teacher example and expectations. Students pick their scientists from a predetermined list.
Day 6: Research day 1: General information about their scientist
Day 7: Research day 2: Scientific discoveries, experiments, or any other contributions
Day 8: Research day 3: Significance of scientific contributions
Day 9: Creating presentation: Focuses on formatting student presentations. Including adding pictures, transitions, animations, and the information they have gathered.
Day 10: Creating presentation: Continue to perfect presentations and practice presenting to one another.
Day 11: Presentations
Day 12: Presentations
Day 13: Presentations
Day 14: Reflection: Students reflect on their project and their peers' projects. They reflect on what this unit taught them and how it relates to the scientific world today.
Day 15: Reflection and post survey: Continuation of the essay from the day before. Students take part in a post survey asking about what they know about scientists of color.

Lesson Plans

Unit Title: Diverse Contributions to Science

Subject: 8th grade Earth Science

Teacher: Samantha Karnes

Duration: 15 instructional days (45 minute class periods)

Week 1: Days 1 – 5

Day 1	Day 2	Day 3	Day 4	Day 5
Objectives: Identify students' misconceptions of scientists. **Warm-up:** Bellringer question asking students to create a list of famous scientists they know. *Materials:* *Weekly Bellringer Worksheet* **Class Discussion:** Students will participate in a discussion based off of their answers from the Bellringer. *Materials:* *Weekly Bellringer Worksheet* **Jamboard:** Use sticky note feature to answer the question: What is a scientist? *Materials:* *Google Jamboard* *Student Chromebook* **Pre-survey:** Students will answer the questions to determine what they believe scientists are. *Materials:* *Pre-survey Worksheet*	**Objectives:** Analyze characteristics of real scientists. Realize what makes someone a scientist. **Warm-up:** What does a scientist look like? *Materials:* *Weekly Bellringer Worksheet* **What is a scientist?:** Using their ideas from the day before, students draw a picture of a scientist. *Materials:* *What does a scientist look like? Worksheet* **Class Discussion:** Comparing what the class thinks a scientist looks like to real life scientists. *Materials:* *What does a scientist look like? Worksheet* *I am a Scientist Website*	**Objectives:** Introduce a diverse group of famous/notable scientists to students. **Warm-up:** The scientists we will be learning about today are: Jane Goodall, Marie Curie, Tu Youyou, and John Herrington. Have you heard of any of these scientists? If yes, what do you know about them? *Materials:* *Weekly Bellringer Worksheet* **Jigsaw Activity:** Students will work in groups to become experts on their assigned scientist or engineer. This is followed by students teaching about their scientist to their home group. The scientists used for this activity are: Jane Goodall Marie Curie Tu Youyou	**Objectives:** Introduce a diverse group of famous/notable scientists to students. **Warm-up:** List two things you learned about from yesterday's Jigsaw Activity. *Materials:* *Weekly Bellringer Worksheet* **Jigsaw Activity:** This activity will be set up the same way as on Day 4, however, the scientists will be different. The scientists that will be focused on for this activity are: Luis Walter Alvarez Fazlur Rahman Khan Mae Jemison Dr. Hayat Sindi *Materials:* *Jigsaw Graphic Organizer* *Videos, podcasts, and articles about the specific scientist*	**Objectives:** Introduce student research project and model an example. **Warm-up:** We will be completing a research project on famous diverse scientists. Do you have an idea of who you would like to research? *Materials: Weekly Bellringer Worksheet* **Introduction to Project:** Project directions and expectations will be laid out for students. *Materials:* *Project Directions* *Project Rubric/Grading Sheet* *Student Completion Timeline* *Student Recording Sheet* *List of Scientists/Engineers* **Teacher Example:** Students will be shown an example

Exit Ticket: What did you learn today? *Materials:* *Exit Ticket Worksheet*	**Exit Ticket:** Describe how you are a scientist. *Materials:* *Exit Ticket Worksheet*	John Herrington *Materials:* *Jigsaw Graphic Organizer* *Videos, podcasts, and articles about the specific scientist* **Exit Ticket:** List one fact you learned about for each scientist. *Materials:* *Exit Ticket Worksheet*	**Exit Ticket:** List one fact you learned about for each scientist. *Materials:* *Exit Ticket Worksheet*	that will meet/exceed project requirements *Materials:* *Example Project SlideShow and Student Recording Sheet* **Choosing Scientists:** Students will be chosen randomly to pick the scientist for their project *Materials:* *Random Name Picker* *List of Scientists/Engineers* **Exit Ticket:** Who is the scientist or engineer that you will be researching? *Materials:* *Exit Ticket Worksheet*

Day	**1**
Lesson	**1**
Objectives	**Students will be able to determine characteristics of scientists.** **SWBAT identify similarities between well-known scientists.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: *Create a list of famous scientists you have heard of.* When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers	- Weekly Bellringer Worksheet - Digital timer - Bellringer SlideShow

	Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	
Warm-up Discussion 5 – 10 minutes	After students have completed the Bellringer, call on student volunteers to share their lists of scientists. Ask probing questions such as: Are there any common characteristics between these scientists? What do you notice about the scientists that are mentioned the most often? Why do you think we are hearing the same names come up over and over? (assuming student lists are very similar). By asking these questions the goal is to have a discussion about why students chose these scientists. This will lead to seeing commonalities between the scientists mentioned.	
Identify student misconceptions 20 minutes	**Google Jamboard :** To introduce the unit students will first complete a sticky note activity on Google Jamboard. The question students will answer will be available on the Jamboard asking: What is a scientist? Students will be expected to use the sticky note tool to add to the Jamboard. Each student will add one sticky note with a list of things they believe scientists embody. This may include characteristics of character or physical attributes, what they believe scientists wear, etc. The results from the Jamboard will be used on Day 2 to compare what the students think scientists look like to what real scientists look like.	- Google Jamboard - Student Chromebooks
Pre-survey 5 – 10 minutes	Students will take part in a pre-survey in order to evaluate learning at the end of the unit. This survey will ask students a series of four questions regarding the list of scientists they created and if they see any themes within their list. The purpose of this is for students to see their growth after the unit.	- Student Pre-survey listed in Supporting Documents
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one question: *What did you learn today?* After answering the question, students turn this in.	- Exit ticket listed in Supporting Documents

Day	**2**

Lesson	**1 continued**
Objectives	**SWBAT create a list of characteristics that scientists have.** **SWBAT relate these characteristics to themselves.** **SWBAT draw conclusions on what real scientists look like.**

Lesson Sequence & Timing	**Activities**	**Materials, Resources, Technology**
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: *What does a scientist look like?* When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	**-** Weekly Bellringers Worksheet
What does a Scientist Look Like? 15 – 20 minutes	**What does a scientist look like?** Using the left side of the What does a scientist look like? worksheet labeled: What I Think a Scientist Looks Like, students will draw a picture of what they think a scientist looks like. They will use the ideas from the Jamboard activity from the day before and their own ideas for this part of the activity. For their drawing, students will include detail and color.	- What does a scientist look like? Worksheet
Class Discussion 20 minutes	**Class Discussion on What does a scientist look like?:** Using posters and supplemental materials from the I am a Scientist Website, the class is shown pictures of real, diverse scientists. Questions such as How do these scientists compare to what you thought a scientist looks like? Are you surprised about what you see? How does this change your perspective of what scientists look like? After the discussion, students will get their pictures taken and it will be put next to their drawing of a scientist.	- What does a scientist look like? Worksheet - I am a Scientist Website (iamascientist.info)

Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one prompt: *Describe how you are considered a scientist.* After answering the question, students turn this in.	- Exit Ticket Worksheet

Day	**3**
Lesson	**2**
Objectives	**SWBAT analyze various mediums for main ideas.** **SWBAT collaborate with peers.** **SWBAT teach one another about important figures in science.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: *The scientists we will be learning about today are: Jane Goodall, Marie Curie, Tu Youyou, and John Herrington. Have you heard of any of these scientists? If yes, what do you know about them?* When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	- Weekly Bellringers Worksheet
Jigsaw Activity 40 minutes	**Jigsaw Day 1:** Students will be put into groups of four, this group will be known as their Expert Groups. In these initial groups, they will be given various materials about a specific scientist. They will become the experts on this one scientist. In their expert groups, student groups will determine what they will be taking away and sharing with their Home Groups. While they are deciding on their information, all group members are writing notes on their scientist to share with their Home Groups. This part of the activity takes about 15-20 minutes.	- Jigsaw Graphic Organizer - Videos, podcasts, and articles about the specific scientist

	After deliberating with their Expert Groups, students will shift to their Home Groups. In this group, each student takes their turn in teaching the group about their scientist. As each student is talking, the others are to write notes on the different scientists.	
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one prompt: *List one fact you learned about for each scientist.* After answering the question, students turn this in.	- Exit Ticket Worksheet

Day	**4**
Lesson	**2 continued**
Objectives	**SWBAT analyze various mediums for main ideas.** **SWBAT collaborate with peers.** **SWBAT teach one another about important figures in science.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: *List two things you learned about from yesterday's Jigsaw Activity.* When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	- Weekly Bellringer Worksheet
Jigsaw Activity 40 minutes	**Jigsaw Day 2:** This is set up the same way as the day before, but with four new diverse scientists and engineers. Students will be put into groups of four, this group will be known as their Expert Groups. In these initial groups, they will be given various materials about a specific scientist. They will become the experts on this one scientist. In their expert groups, student groups will determine what they will be taking away and sharing with their Home	- Jigsaw Graphic Organizer - Videos, podcasts, and articles about the specific scientist

	Groups. While they are deciding on their information, all group members are writing notes on their scientist to share with their Home Groups. This part of the activity takes about 15-20 minutes. After deliberating with their Expert Groups, students will shift to their Home Groups. In this group, each student takes their turn in teaching the group about their scientist. As each student is talking, the others are to write notes on the different scientists.	
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one prompt: *List one fact you learned about for each scientist.* After answering the question, students turn this in.	- Exit Ticket Worksheet

Day	**5**
Lesson	**3**
Objectives	**SWBAT determine a scientist for their research project.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: *We will be completing a research project on famous diverse scientists. Do you have an idea of who you would like to research?* When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	- Weekly Bellringer Worksheet
Introduction to Student Research Project 15 – 18 minutes	**Research Project Introduction:** During this time, directions and expectations are explained to students. Students are given the appropriate materials needed to follow instructions. The steps to complete the project are also explained. Each day of research is dedicated to a specific part of the project. This	- Project Directions - Project Rubric/Grading Sheet - Student Completion Timeline - Student Recording Sheet - List of Scientists and Engineers

	is explained to students and shown in the materials.	
Teacher Example 10 – 12 minutes	An example project is presented to students. This project showcases how students will meet expectations and give pointers on good presentation skills. The example will correlate how the Student Recording Sheet is vital to the creation of the SlideShow.	- Example Project SlideShow - Example Student Recording Sheet
Scientist Selection 5 – 10 minutes	Students are given about five minutes to do a quick skim of the list of scientists and engineers. With these five minutes students are allowed to do a brief google search to explore which scientists they may enjoy learning most about. After they have done a quick search, students are expected to make a short list of about five scientists that they would like to do their project one. Once the five minutes are up, using a random name picker, students will choose their scientist. There will be no repeats of scientists.	- Random Name Picker - List of Scientists and Engineers
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one question: *Who is the scientist you will be researching?* After answering the question, students turn this in.	- Exit Ticket Worksheet

Week 2: Days 6 – 10

Day 6	Day 7	Day 8	Day 9	Day 10
Objectives: Students are working on a week-long research project one step at a time. One step per day will be suggested. **Warm-up:** Who is your scientist? What are you most excited to learn about in regards to your scientist? *Materials:* *Weekly Bellringers Worksheet* **Project Research:** The first day of research is dedicated to finding out the general information of students' scientists. *Materials:* *Student Recording Sheet* **Exit Ticket:** List one thing you have learned so far about your scientist. *Materials:* *Exit Ticket Worksheet*	**Objectives:** Students are working on a week-long research project one step at a time. One step per day will be suggested. **Warm-up:** What is your goal to complete for your project today? *Materials:* *Weekly Bellringers Worksheet* **Project Research:** The second day of research is dedicated to discovering what the scientist is famous for. *Materials:* *Student Recording Sheet* **Exit Ticket:** Turn to someone next to you. What is the name, birthdate, and death date (if there is one) of their scientist? *Materials:* *Exit Ticket Worksheet*	**Objectives:** Students are working on a week-long research project one step at a time. One step per day will be suggested. **Warm-up:** Turn to a neighbor, compare scientists. Is there anything that your scientists have in common? *Materials:* *Weekly Bellringers Worksheet* **Project Research:** The third day of research is dedicated to students discovering the significance of their scientist's work, finding interesting facts about their scientist, and getting caught up on research they did not finish from the first two days. *Materials:* *Student Recording Sheet* **Exit Ticket:** Briefly, in two to three sentences write about the significance of your scientist. Why are	**Objectives:** Students are working on a week-long research project one step at a time. One step per day will be suggested. **Warm-up:** Today you should be starting to create your presentation. Do you have all of the necessary information gathered to begin your SlideShow? If not, what are you missing? *Materials:* *Weekly Bellringers Worksheet* **Project Research:** After three solid days of research, students begin putting together their presentations. Including adding pictures and formatting the presentation. *Materials:* *Google SlideShow* *Student Recording Sheet* **Exit Ticket:** List three interesting facts you have learned about your scientist. *Materials:*	**Objectives:** Students are working on a week-long research project one step at a time. One step per day will be suggested. **Warm-up:** What is your plan for finishing your project today? *Materials:* *Weekly Bellringers Worksheet* **Project Research:** The last in class work day for the project is used for completing students' presentations. Practice presenting among one another. *Materials:* *Google SlideShow* *Student Recording Sheet* **Exit Ticket:** Presentations begin on Monday. Is there any more work that you will need to put into your project to have it be ready by then? *Materials:* *Exit Ticket Worksheet*

		they important to modern day science? *Materials:* *Exit Ticket* *Worksheet*	*Exit Ticket* *Worksheet*	

Day	**6**
Lesson	**3 continued**
Objectives	**SWBAT discover the basic information on their chosen scientist.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: Who is your scientist? What are you most excited to learn about in regards to your scientist? When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	- Weekly Bellringers Worksheet
Project Research 40 minutes	**Research Day One:** Step one of students researching is to find the basic information on their scientist. This includes the scientist's: -First and last name -Date of birth -Where they were born -What nationality or ethnicity they are -The date of their death (if applicable) -If they went to college, where -Family information All of this information is collected and recorded on the Student Recording Sheet.	- Student Recording Sheet
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one prompt: List one thing you have learned so far about your scientist. After answering the question, students turn this in.	- Exit Ticket Worksheet

Day	**7**
Lesson	**3 continued**
Objectives	**SWBAT research and record what their scientist discovered or created.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: What is your goal to complete for your project today? When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	- Weekly Bellringers Worksheet
Project Research 40 minutes	**Research Day Two:** Information that is to be researched on day two is: -Other scientists they collaborated with -Their most notable projects, discoveries, or inventions -Other things the scientist is famous for Again, this information is collected and recorded on the Student Recording Sheet.	- Student Recording Sheet
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one question: Turn to someone next to you. What is the name, birthdate, and death date (if there is one) of their scientist? After answering the question, students turn this in.	- Exit Ticket Worksheet

Day	**8**
Lesson	**3 continued**
Objectives	**SWBAT determine the significance of their scientists findings and accomplishments.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: Turn to a neighbor, compare scientists. Is there anything that your scientists have in common?	- Weekly Bellringers Worksheet

	When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	
Project Research 40 minutes	**Research Day Three:** The information that is to be researched on day three is: -The significance of their scientist's work -Interesting facts -Catching up on any research they have not finished from days prior Again, this information is collected and recorded on the Student Recording Sheet.	- Student Recording Sheet
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one question: Briefly in two to three sentences write about the significance of your scientist. Why are they important to modern day science? After answering the question, students turn this in.	- Exit Ticket Worksheet

Day	**9**
Lesson	**3 continued**
Objectives	**SWBAT create a presentation on a diverse scientist of their choice.** **SWBAT use technology to format a SlideShow presentation to look professional.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: Today you should be starting to create your presentation. Do you have all of the necessary information gathered to begin your SlideShow? If not, what are you missing? When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on	- Weekly Bellringers Worksheet

	their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	
Project Research 40 minutes	**SlideShow Worktime:** The last two days of the project research is dedicated to students perfecting their SlideShows. This day will primarily focus on: -Formatting their slides -Adding pictures to each slide -Transitions and animations where appropriate	- Google SlideShow - Student Recording Sheet
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one prompt: List three interesting facts you have learned about your scientist. After answering the question, students turn this in.	- Exit Ticket Worksheet

Day	**10**
Lesson	**3 continued**
Objectives	**SWBAT create a presentation on a diverse scientist of their choice.** **SWBAT practice communicating the information from their slides to peers.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: What is your plan for finishing your project today? When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	- Weekly Bellringers Worksheet
Project Research 40 minutes	**SlideShow Worktime:** The last two days of the project research is dedicated to students perfecting their SlideShows. This day will primarily focus on: -Completing the formatting of slides	- Google SlideShow - Student Recording Sheet

	-If time allows, students can practice giving their presentations to one another.	
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one question: Presentations begin on Monday. Is there any more work that you will need to put into your project to have it be ready by then? After answering the question, students turn this in.	- Exit Ticket Worksheet

Week 3: Days 11 – 15

Day 11	Day 12	Day 13	Day 14	Day 15
Objectives: Students are participating in and audiences for presentations given on diverse scientists. **Warm-up:** Are you ready for your presentation? What information are you most excited to share with the class? *Materials:* *Weekly Bellringers Worksheet* **Presentations:** Students will be giving 7-10 minute presentations on their chosen scientists. When students are not presenting they are taking notes on their peers' projects. After each presentation there will be time to ask questions and briefly discuss how some scientists may have similarities or differences. *Materials:* *Google SlideShow* *Student Note Sheet* **Exit Ticket:** Which scientist did you find the most interesting? Why?	**Objectives:** Students are participating in and audiences for presentations given on diverse scientists. **Warm-up:** During presentations, what should you be doing while you are listening to your classmates? *Materials:* *Weekly Bellringers Worksheet* **Presentations:** Students will be giving 7-10 minute presentations on their chosen scientists. When students are not presenting they are taking notes on their peers' projects. After each presentation there will be time to ask questions and briefly discuss how some scientists may have similarities or differences. *Materials:* *Google SlideShow* *Student Note Sheet* **Exit Ticket:** List two things you learned from	**Objectives:** Students are participating in and audiences for presentations given on diverse scientists. **Warm-up:** So far, what have you learned about from your classmates' presentations? What is the most interesting information that you've heard? *Materials:* *Weekly Bellringer Worksheet* **Presentations:** Students will be giving 7-10 minute presentations on their chosen scientists. When students are not presenting they are taking notes on their peers' projects. After each presentation there will be time to ask questions and briefly discuss how some scientists may have similarities or differences. *Materials:* *Google SlideShow* *Student Note Sheet*	**Objectives:** Reflect on their project and what they have learned about diverse scientists and the contributions they've made. **Warm-up:** Now that you and your classmates have finished your presentations, is there anything you would do differently? *Materials:* *Weekly Bellringers Worksheet* **Reflection Essay:** Students are tasked with writing an essay discussing how the scientific community and the world has been influenced by the scientists they learned about during this unit. *Materials:* *Reflection Essay Worksheet* **Exit Ticket:** From the presentations the last few days, were there any scientists you had heard of before? Were there any that you haven't	**Objectives:** Reflect on their project and what they have learned about diverse scientists and the contributions they've made. **Warm-up:** How is your reflection going? Which scientist had the biggest impact on you? Which did you identify with the most? *Materials:* *Weekly Bellringers Worksheet* **Essay Reflection:** Students are tasked with writing an essay discussing how the scientific community and the world has been influenced by the scientists they learned about during this unit. *Materials:* *Reflection Essay Worksheet* **Post Survey:** The post survey is conducted after the presentations and after students have had the opportunity to reflect in their essay. This survey

Materials: *Exit Ticket* *Worksheet*	today's presentations. *Materials:* *Exit Ticket* *Worksheet*	**Exit Ticket:** List two things you learned from today's presentations. *Materials:* *Exit Ticket* *Worksheet*	heard of? Why do you think that is? *Materials:* *Exit Ticket* *Worksheet*	will be identical to the pre-survey. *Materials:* *Post Survey* **Exit Ticket:** Now that you have completed your project and reflection. What is one main takeaway you have from this unit? *Materials:* *Exit Ticket* *Worksheet*

Day	**11**
Lesson	**4**
Objectives	**SWBAT communicate their research findings to peers.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: *Are you ready for your presentation? What information are you most excited to share with the class?* When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	- Weekly Bellringers Worksheet
Presentations 40 minutes	Student presentations will be about 7-10 minutes each. When not presenting, students are actively listening and taking notes on each other's projects. Between every few presentations, students are to discuss what they have heard so far. The discussions will focus on what students have learned about the different scientists so far, if they have	- Google SlideShow - Student Note Sheet

	noticed any trends between scientists, and sharing what they have written down for their notes.	
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one question: *Which scientist did you find the most interesting? Why?* After answering the question, students turn this in.	- Exit Ticket Worksheet

Day	**12**
Lesson	**4 continued**
Objectives	**SWBAT create a presentation on a diverse scientist of their choice.** **SWBAT communicate their research findings to peers.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: *During presentations, what should you be doing while you are listening to your classmates?* When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	- Weekly Bellringers Worksheet
Presentations: 40 minutes	The second day of presentations is set up identical to the first. Student presentations will be about 7-10 minutes each. When not presenting, students are actively listening and taking notes on each other's projects. Between every few presentations, students are to discuss what they have heard so far. The discussions will focus on what students have learned about the different scientists so far, if they have noticed any trends between scientists, and sharing what they have written down for their notes.	- Google SlideShow - Student Note Sheet
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one	- Exit Ticket Worksheet

	question: *List two things you learned from today's presentations.* After answering the question, students turn this in.	

Day	**13**
Lesson	**4 continued**
Objectives	**SWBAT communicate their research findings to peers.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: *So far, what have you learned about from your classmates' presentations? What is the most interesting information that you've heard?* When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	- Weekly Bellringers Worksheet
Presentations 40 minutes	The last day of presentations is set up identical to the first two days. Student presentations will be about 7-10 minutes each. When not presenting, students are actively listening and taking notes on each other's projects. Between every few presentations, students are to discuss what they have heard so far. The discussions will focus on what students have learned about the different scientists so far, if they have noticed any trends between scientists, and sharing what they have written down for their notes.	- Google SlideShow - Student Note Sheet
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one question: *List two things you learned from today's presentations.* After answering the question, students turn this in.	- Exit Ticket Worksheet

Day	**14**
Lesson	**5**

Objectives	**SWBAT relate the presentations to real-life values.** **SWBAT make connections and conclusions based off the presented information.**

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: *Now that you and your classmates have finished your presentations, is there anything you would do differently?* When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	- Weekly Bellringers Worksheet
Reflection Essay 40 minutes	Students are given time to reflect on the presentations they participated in and relate it back to our overarching goal of the unit. Students are tasked with writing an essay discussing how the scientific community and the world has been influenced by the scientists they learned about during this unit. This reflection is done on the Reflection Essay Worksheet. If students do not finish they have some time the next day.	- Reflection Essay Worksheet
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one question: *From the presentations the last few days, were there any scientists you had heard of before? Were there any that you haven't heard of? Why do you think that is?* After answering the question, students turn this in.	- Exit Ticket Worksheet

Day	**15**
Lesson	**5 continued**
Objectives	**SWBAT relate the presentations to real-life values.** **SWBAT make connections and conclusions based off the presented information.**

	SWBAT compare their knowledge of diverse scientists from the beginning of the unit to their knowledge at the end.

Lesson Sequence & Timing	Activities	Materials, Resources, Technology
Lesson Launch 3 minutes	**Warm-up:** Bellringer question: *How is your reflection going? Which scientist had the biggest impact on you? Which did you identify with the most?* When students walk into class, The Bellringer question will be visible on the board. They will take the first three minutes of class getting their supplies out, preparing for class, and answering the Bellringer on their Weekly Bellringers Worksheet. Students will turn in this worksheet at the end of every week and receive a new one at the beginning of the week.	- Weekly Bellringers Worksheet
Reflection Essay 25 – 30 minutes	This is a continuation from the day before. Students are given time to reflect on the presentations they participated in and relate it back to our overarching goal of the unit. Students are tasked with writing an essay discussing how the scientific community and the world has been influenced by the scientists they learned about during this unit. This reflection is done on the Reflection Essay Worksheet.	- Reflection Essay Worksheet
Post Survey 10 – 15 minutes	After completing their Essay Reflection, students work on the unit post survey. This survey will be identical to the pre-survey. The survey should be answered in complete sentences. This is used to evaluate the learning and understanding students have gained from the unit.	- Post Survey Worksheet
Exit Ticket 2 minutes	The last two minutes of class is dedicated to an exit ticket. The exit ticket will have one question: *Now that you have completed your project and reflection. What is one main takeaway you have from this unit?* After answering the question, students turn this in.	- Exit Ticket Worksheet

Week of: _____ **Name:** _____

Weekly Bellringers

Date:	**Question:** **Answer:**
Date:	**Question:** **Answer:**
Date:	**Question:** **Answer:**
Date:	**Question:** **Answer:**

Date:	Question: Answer:

Student Daily Exit Ticket Worksheet (Question will change daily and are listed in lesson plans)

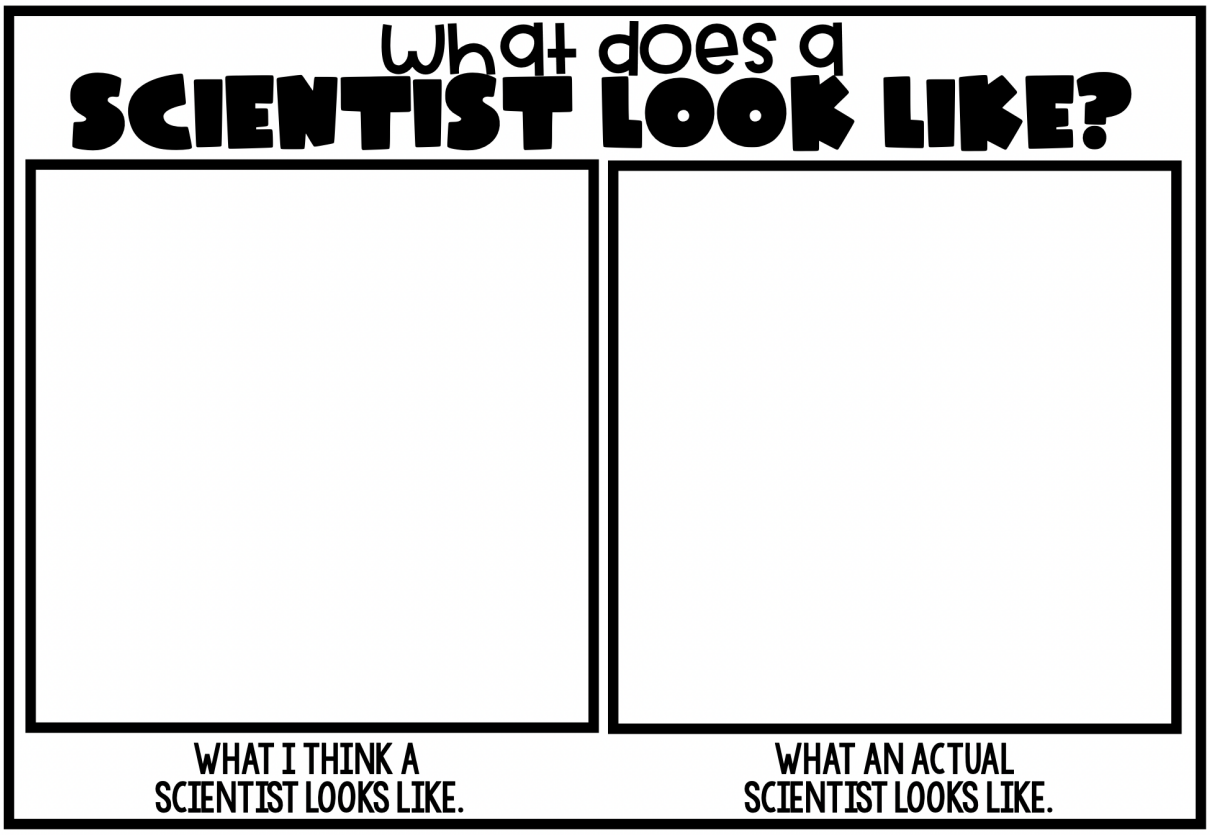
Name: _____

Exit Ticket

What did you learn today?

Google JamBoard

What does a scientist look like?



Name: _____

Student Pre-survey

1. **Write down a list of about 5 to 6 scientists that you know of (this can be the same list as the one from your Bellringer).**

2. **What do these scientists have in common? What are their differences?**

3. **Where/how did you learn about these scientists?**

4. **Does your list of scientists correspond with the characteristics from our class Jamboard? Explain.**

Screenshot from IAmAScientist.info

Noor Al-Alusi
EPIDEMIOLOGIST • BLACK BELT

Ryoji Amamoto, PhD
NEUROBIOLOGIST • WORLD TRAVELER

Rodrigo Braga, PhD
NEUROSCIENTIST • MUSICIAN

Wade Campbell
ARCHAEOLOGIST • SOCCER PLAYER

Yamicia Connor, MD, PhD
MEDICAL SCIENTIST • TEACHER

Francesca Dominici, PhD
BIOSTATISTICIAN • MARATHONER

Scott Edwards, PhD
ORNITHOLOGIST • CURATOR

Cassandra Extavour, PhD
CELLULAR BIOLOGIST • SINGER

First Jigsaw Activity Materials

Jane Goodall:

- National Geographic Collection: https://www.nationalgeographic.org/education/channel/jane-goodall/
- Jane Goodall Institute: https://www.janegoodall.org/
- CBS News, "Jane Goodall and Her Chimps": https://www.youtube.com/watch?v=k5Q6-hh49mU
- SciShow Kids, "Into the Forest with Jane Goodall!": https://www.youtube.com/watch?v=5PwcY_axJwA

Marie Curie:

- Smithsonian Magazine, "Madame Curie's Passion": https://www.smithsonianmag.com/history/madame-curies-passion-74183598/
- National Geographic Kids, Women Heroes: Marie Curie: https://kids.nationalgeographic.com/history/article/marie-curie
- Khan Academy, "Marie Curie: Chemistry, Physics, and Radioactivity": https://www.khanacademy.org/humanities/big-history-project/stars-and-elements/knowing-stars-elements/a/marie-curie
- TED-Ed, "The genius of Marie Curie – Shohini Ghose: https://www.youtube.com/watch?v=w6JFRi0Qm_s
- CrashCourse, "Marie Curie and Spooky Rays: Crash Course History of Science #31": https://www.youtube.com/watch?v=7qlRjqUMX4E

Tu Youyou:

- Scientific Women, "History of Scientific Women: Tu Youyou": https://scientificwomen.net/women/youyou-tu-97
- The Nobel Prize, "Women who changed science: Tu Youyou": https://www.nobelprize.org/womenwhochangedscience/stories/tu-youyou
- ITV News, "Tu Youyou becomes first Chinese woman to win a Nobel Prize": https://www.youtube.com/watch?v=S0_SbojHGeo
- Nobel Prize, "Women who changed the world: Youyou Tu": https://www.youtube.com/watch?v=UPqFwaxLvqg

John Herrington:

- Oklahoma Historical Society, "Herrington, John Bennett (1958-)": https://www.okhistory.org/publications/enc/entry.php?entry=HE024
- Chickasaw Hall of Fame, "John Herrington": https://hof.chickasaw.net/Inductees/2002/John-Herrington.aspx
- Oklahoma Hall of Fame, " John Herrington Biography – Oklahoma Hall of Fame": https://www.youtube.com/watch?v=WcirOhOaDgk
- Time in Cosmology, "Astronaut John Herrington Interview": https://www.youtube.com/watch?v=k651SZ0m6Ow

Second Jigsaw Activity Materials

Luis Walter Alvarez:

- The Nobel Prize, "Luis Walter Alvarez: Biographical": https://www.nobelprize.org/prizes/physics/1968/alvarez/biographical/
- Famous Scientists, "Luis Alvarez": https://www.famousscientists.org/luis-alvarez/
- Vision Learning, " Luis Walter Alvarez: Uncovering Secrets of the Atom and Life on Earth": https://www.visionlearning.com/en/library/Inside-Science/58/Luis-Walter-Alvarez/229
- Graybeard Productions, "Luis W. Alvarez": https://www.youtube.com/watch?v=TvxiV7Pn9xE
- Studies Weekly, "Inventors Hall of Fame – Luis Alvarez": https://www.youtube.com/watch?v=wIxoEGZoDkI

Fazlur Rahman Khan:

- Britannica, "Fazlur R. Khan: American engineer": https://www.britannica.com/biography/Fazlur-R-Khan
- Lehigh University, "The Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture": https://www.lehigh.edu/~infrk/chair.html
- World Update News, "Fazlur Rahman Kahn: 5 Facts You Need to Know": https://www.youtube.com/watch?v=9vYGfAFSBtc
- HiFi Public, "Fazlur Rahman Khan – Father of Modern Architecture": https://www.youtube.com/watch?v=GOK2oJ8J2nY

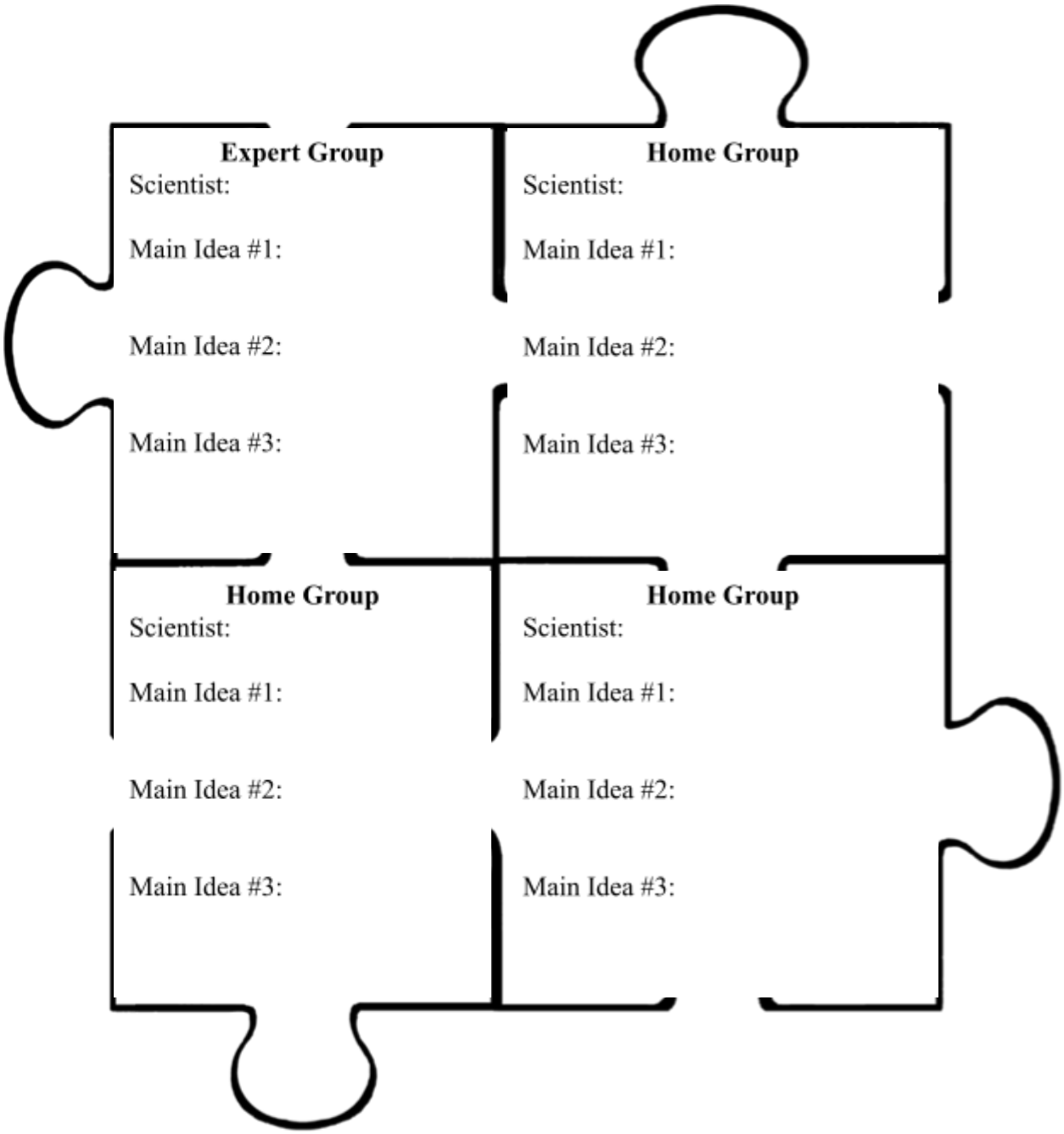
Mae Jemison:

- Biography, "Mae C. Jemison": https://www.biography.com/astronaut/mae-c-jemison
- National Women's History Museum, "Mae Jemison": https://www.womenshistory.org/education-resources/biographies/mae-jemison
- NASA, "Mae Jemison: Biographical Data": https://www.nasa.gov/sites/default/files/atoms/files/jemison_mae.pdf
- Biography, "Mae Jemison: First African American Woman in Space": https://www.youtube.com/watch?v=rWxGAogqr4M
- NOVA's Secret Life of Scientists and Engineers, "Mae Jemison: I Wanted To Go Into Space": https://www.youtube.com/watch?v=B0vGDfuWhfI

Dr. Hayat Sindi:

- National Geographic, "Biotechnologist and Entrepreneur: Dy. Hayat Sindi": https://www.nationalgeographic.org/article/real-world-geography-dr-hayat-sindi/
- National Geographic, "Explorer Profile: Hayat Sindi, Biotechnologist": https://www.nationalgeographic.org/article/explorer-profile-hayat-sindi-biotechnologist/
- Aunitali1, "Hayat Sindi Biotech Scientist": https://www.youtube.com/watch?v=PnAJ4GNcigc
- TEDx Talks, "The potential of science for social impact – Hayat Sindi": https://www.youtube.com/watch?v=-a9YziNtntU

Jigsaw Graphic Organizer



Diverse Scientists Research Project

Directions:
Now that we have learned about various scientists, it is your turn to create a presentation on a diverse scientist of your choice. You may pick one scientist or engineer from the list given to you. If you would like to research a scientist that is not on the list, you must check with me first.

For this project you are to complete research on and create a presentation about your chosen scientist. This project will take about two weeks. The first week is dedicated to your research and making your presentation. While completing your research you will fill out the Research Recording Sheet. This is to help you organize your research and to know what to put into your presentation.

The second week is for presentations. During presentations, it is expected that you are actively listening to your peers' and completing the Presentation Note Sheet for each presentation. For this sheet you will fill out the name of the presenter, their scientist and three things you learned from their presentation.

To break down this project I have attached a Completion Timeline that determines what should be completed each day. If you follow the timeline, you will have no problem finishing this project. As you complete your research you can use the timeline to check off what you have done so far.

Once everyone has presented their projects, you will each write a reflection on what you have learned about diverse scientists and what you have learned overall from this unit.

Completion Timeline

Day 1: This is the information you should have collected after day one of research.
General Information about Scientist:

Research	Done?
Name	
Birth place	
Date of birth	
Date of death	
Field of study	
Where they studied	
3 interesting facts	
Information on early life	
Information on adult life	

Day 2:
Scientist's Work:

Research	Done?
What are they most famous for?	
Years of invention or experiment	

Where it happened	
Did your scientist work with others?	
If yes, who?	

Day 3:

Significance of Scientist's Work:

Research	Done?
Why is their work important?	
How did it benefit the world?	
What are the impacts of their work?	

Day 4 and 5: On these days you will start constructing your presentation. You will need relevant and appropriate pictures, one picture per slide is highly suggested. You will format your slides, add transitions and animations where necessary. Make your presentation look professional and something you are proud to share with others. If there is time left over and you have finished all aspects of your project, it is highly recommended that you practice presenting with one other person or in a small group of 2-3 classmates.

Name: _____ **Scientist Name:** _____

Presentation Rubric

Criteria	5 points	4 points	3 points	2 points	1 point	0 points	Your Score
General Scientist Information	Includes: -Name of scientist -Birthplace -Birthdate and death date -Field of study -3 interesting facts	Missing one of the required items	Missing two of the required items	Missing three of the required items	Missing four of the required items	Missing all of the required items	
Scientist's Life	Includes: Extremely detailed description in own words of -Scientist's early life -Adult life	Detailed description	Somewhat detailed description	Basic description	Missing one of the requirements completely	Missing all of the required items	
Scientist's Work	Includes: -Detailed description of what the scientist is famous for -Years is occurred -Where it occurred -Who they worked with	Somewhat detailed description	Basic description and missing one of the requirements	Missing two of the requirements	Missing three of the requirements	Missing all of the required items	
Significance of Work	Includes: -Extremely detailed description of the significance of scientist's work	Detailed description	Somewhat detailed description	Basic detailed description	Missing one of the requirements completely	Missing all of the required items	

	-How it has benefitted and impacted the world						
Format of SlideShow	Includes: -Professional SlideShow -Transitions between slides -Animations when necessary -Pictures on each slide -Contains a Work Cited Slide	Missing one of the required items. Missing Work Cited.	Missing two of the required items	Missing three of the required items	Missing four of the required items	Missing all of the required items	
Behavior During Presentations	Includes: -Respectful -Quiet during presentations	Did not follow the expectations for presentations	Was given one warning during presentations	Was given two warnings	Was given three warnings	Was asked to leave the class	
Student Recording Sheet	Includes: -Filled out Recording Sheet during research -Complete before presentations	Missing one item on Recording Sheet	Missing two items on Recording Sheet	Missing three items on Recording Sheet	Missing four items on Recording Sheet	Did not complete Recording Sheet	
Presentation Note Sheet	Includes: -Took notes for each presentation	Did not take notes for two presentations	Did not take notes for three presentations	Did not take notes for four presentations	Did not take notes for five presentations	Did not take any notes	

Name:

Research Recording Sheet

General Information:
Name of your scientist:

Birth Place:

Date of Birth:

Date of Death (if applicable):

Field of Study:

Where they went to school:

At least three interesting facts:

Early Life:

Adult Life:

What your scientist is most famous for (description in your own words):

Years the invention or experiment occurred:

Where it occurred:

Who your scientist worked with:

Significance of scientist's work:

How has your scientist's work benefitted and how it impacts the world today:

List of Possible Scientists and Engineers to Research

Charles S. L. Baker
Michio Kaku
Cynthia Breazeal
Gladys West
Juliana Rotich
Charles Kao
George Washington Carver
Emmett Chappelle
Mary M. Daly
Dian Fossey
Percy Julian
Katherine Johnson
Rosalind Franklin
Francis Crick
Neil deGrasse Tyson
Alfred Nobel
Narinder S. Kapany
Steven Chu
Fred Begay
Mary G. Ross
Severo Ochoa
Carlos Noriega
Mario Molina
Isabella Aiona Abbott
Kalpana Chawla

You may pick a scientist that is not on this list, but it must be approved by Ms. Karnes.

Name: Example

Research Recording Sheet

General Information:
Name of your scientist: Albert Einstein

Birth Place: Ulm, Germany

Date of Birth: March 14, 1879

Date of Death (if applicable): April 18, 1955

Field of Study: Physics

Where they went to school: ETH Zürich and University of Zurich

At least three interesting facts: The FBI spied on Einstein for decades, When him and Mileva Maric (his first wife) got divorced, he offered her his Nobel Prize as a part of their divorce settlement, and He was asked to be president of Israel.

Early Life:
-Grew up in a Jewish family.
-Father, Hermann Einstein, was an owner of a business that produced electrical equipment. Mother, Pauline Koch, was a stay at home mom.
-One sister named Maja that was two years younger.
-Had a passion for classical music and played the violin.
-Wrote his first paper when he was in his teens titled, "The Investigation of the State of Aether in Magnetic Fields".
-When he became old enough to be drafted, he dropped out of school, avoided the draft, and joined his parents in Italy.
-Later on, he enrolled at the Swiss Federal Institute of Technology and finished his degree.

Adult Life:
-Married Mileva Maric on Jan. 6, 1903.
-Within the same year, they had a daughter, Lieserl. Later they had two sons, Hans Albert Einstein and Eduard Einstein.
-Mileva and Einstein divorced in 1919 and he married his cousin Elsa Lowenthal in 1919.
-In 1921, he won the Nobel Prize for Physics for his ideas on photoelectric effect.
-In 1933, he moved to the US to flee Europe from the Nazi Party.
-He became a US citizen in 1940.
-Died on April 18, 1955 at the age of 76 at the University Medical Center at Princeton.

What your scientist is most famous for (description in your own words):
-Theory of Relativity and the equation E=MC2
-Equation helped develop the atomic bomb and atomic power
-Theory of Relativity helped explain the motion of planets' orbits around the sun

Years the invention or experiment occurred: He worked on his theory from 1905-1915

Where it occurred: Europe and USA

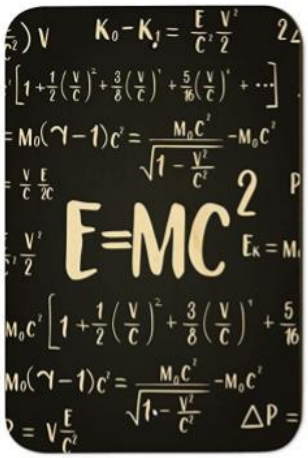
Who your scientist worked with: Worked mostly on his own, but other scientists backed up his claims. These scientists include: Max Planck, Sir Frank Dyson, and Sir Arthur Eddington.

Significance of scientist's work:
-His theories and ideas helped create the atomic bomb, which he later regretted.
-Helped us understand the movements of the planets more accurately.

How has your scientist's work benefitted or impacted the world:
-The creation of the atomic bomb has had a negative effect on the world due to the emphasis on nuclear warfare between countries.

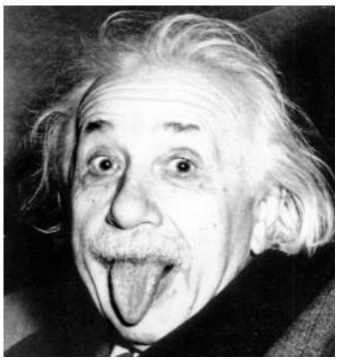
Teacher Example Presentation

Example Slide 1:



Albert Einstein

Ms. Karnes



Example Slide 2:

General Information

- Birthplace: Ulm, Germany
- Born on March 14, 1879 and died on April 18, 1955
- Field of study: Physics
- Schooling: ETH Zurich and the University of Zurich
- Interesting facts:
  - The FBI had spied on Einstein for decades
  - When him and Mileva Maric, his first wife, got divorced, he offered her his Nobel Prize as a part of their divorce settlement
  - He was once asked to be president of Israel

Example Side 3:

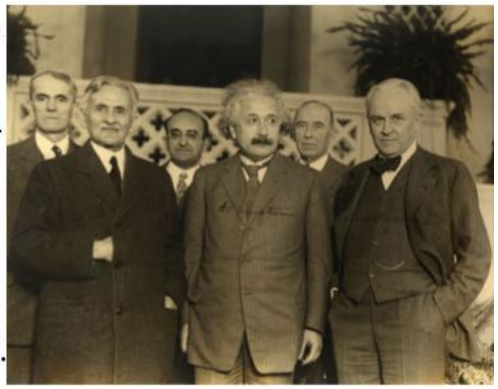
Early Life

- Born on March 14, 1879 in Ulm, Germany
- Grew up in a Jewish family
- Parents were Pauline Koch and Hermann Einstein
  - Father was an owner of a business that produced electrical equipment
  - Mother stayed at home to run the household
- He had one sister, Maja, who was two years younger
- He had a passion for classical music and played the violin
- Wrote his first major paper when he was in his teens called, "The Investigation of the State of Aether in Magnetic Fields"
- He later dropped out of school and avoided the draft and rejoined his parents in Italy
- He was able to re enroll into another institution, Swiss Federal Institute of Technology, and finish his degree

Example Slide 4:

Adult Life

- Married Mileva Maric on Jan. 6, 1903.
- In the same year, had daughter Lieserl. And later on had two sons, Hans Albert Einstein and Eduard Einstein.
- Mileva and Einstein divorced in 1919 and he remarried his cousin, Elsa Lowenthal within the same year.
- 1921, he won the Nobel Prize for Physics for his ideas on photoelectric effect.
- In 1933, he moved to the US to flee Europe from the Nazi Party.
- He became a US citizen in 1940.
- Died on April 18, 1955 at the University Medical Center at Princeton at the age of 76.



Example Slide 5:

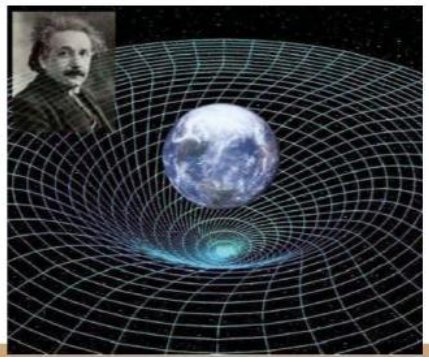
Einstein's Work

- Most famous for: His work on the Theory of Relativity and the equation E=MC2
  - The equation later helped develop the creation of the atomic bomb and atomic power.
  - Theory of Relativity helped explain the motion of the planets' orbits around the sun.
- Years this occurred: He worked on his theory from 1905-1915
- Where he did his work: Europe and the US
- Who he worked with: Worked mostly on his own, but other scientists backed up his theory. These scientists were: Max Planck, Sir Frank Dyson, and Sir Arthur Eddington.

Example Slide 6:

Significance of his work

- His theories and ideas helped create the atomic bomb, which he later regretted.
- The creation of the atomic bomb and atomic power had a negative effect on the world due to the emphasis on nuclear war between countries.
- His Theory of Relativity helped us understand the movements of the planets more accurately.



Example Slide 7:

Work Cited

- https://www.history.com/news/9-things-you-may-not-know-about-albert-einstein
- https://www.biography.com/scientist/albert-einstein
- https://www.nobelprize.org/prizes/physics/1921/einstein/biographical/

Random Name Picker

Screenshot from ClassTools.net

Names are not real student names. They would be changed to the names of my actual students.

Name:

Presentation Note Sheet

While your classmates are giving their presentations, you are to take notes on their scientists. This sheet will be turned in after the last presentation.

Presenter: Scientist: Three things I learned from the presentation (in complete sentences):	Presenter: Scientist: Three things I learned from the presentation (in complete sentences):
Presenter: Scientist: Three things I learned from the presentation (in complete sentences):	Presenter: Scientist: Three things I learned from the presentation (in complete sentences):
Presenter: Scientist: Three things I learned from the presentation (in complete sentences):	Presenter: Scientist: Three things I learned from the presentation (in complete sentences):
Presenter: Scientist: Three things I learned from the presentation (in complete sentences):	Presenter: Scientist: Three things I learned from the presentation (in complete sentences):

Name:

Reflection Essay

Now that all of our presentations are complete and you have had the opportunity to learn from your classmates, you are going to reflect on what you've learned from this project. In the space below, please answer the question: **How has the scientific community, and the world at large been influenced by such a wide array of scientists and engineers?** You may use the notes you wrote during the presentations and your own research to answer this question. Answer the question in complete sentences and mention at least three scientists other than your own.

Name:

Essay Rubric

Criteria	5 points	4 points	3 points	2 points	1 point	0 points	Your Points
Essay Format	Includes: -Correct grammar -Correct Spelling -At least 4 paragraphs (one per scientist)	One or two grammar mistakes or misspellings	Four or five grammar mistakes or misspellings	Many grammar mistakes or misspellings	A lot of grammar mistakes or misspellings	Not in complete sentences, many misspellings, not in paragraph form	
Scientists	-Extremely detailed description of 3 scientists and their work -Detailed description of own scientists and their work	Detailed description of 3 scientists. Detailed description of own scientist.	Mentions 2 scientists and their own.	Mentions 1 scientist and their own.	Only mentions their own scientist	Does not mention any of the scientists from class	
Influence on Scientific Community	-Extremely detailed description of influence on scientific community	Detailed description of influence on scientific community	Somewhat detailed description of influence on scientific community	Basic detailed description of influence on scientific community	Talks about the influence, but uses no detail or evidence	No description of influence on scientific community	
Influence on the World	-Extremely detailed description of influence on the world	Detailed description of influence on the world	Somewhat detailed description of influence on the world	Basic detailed description of influence on the world	Talks about the influence, but uses no detail or evidence	No description of influence on the world	

Name: _____

Student Post Survey

1. **Write down a list of about 5 to 6 scientists that you know of.**

2. **What do these scientists have in common? What are their differences?**

3. **Where/how did you learn about these scientists?**

4. **How do your answers on this survey differ from your answers from the survey at the beginning of this unit?**

Resources

Materials and Articles

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